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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/755,152

01/09/2004

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EXAMINER

PELLEGRINO, BRIAN E

ART UNIT

PAPER NUMBER

3738

MAIL DATE

DELIVERY MODE

07/13/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--|------------------------------------|--|
| Office Action Summary | Application No. 10/755,152 | Applicant(s) POPE ET AL. | |
| | Examiner Brian E. Pellegrino | Art Unit 3738 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 April 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 20,21,24,27-32,35,36,38,47,48,51,70-73,75-79,84-86,89,90 and 94 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 20,21,24,27-32,35,36,38,47,48,51,70-73,75-79,84-86,89,90 and 94 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/29/09 has been entered.

Specification

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: the topographical features being a first “uniform series” and a second “uniform series” was not described or explained in the written disclosure to define what was meant by this terminology.

Claim Objections

Claims 89,90,94 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s)

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in proper dependent form, or rewrite the claim(s) in independent form. These claims all depend from a canceled claim.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 20,21, 32,86,94 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pope et al. (5645601) in view of Heimke (5370698). Fig. 2 shows a joint implant with a generally spherical substrate **108** having a load bearing surface and articulation surface **146** with diamond layer **150** sintered onto the substrate, col. 3, lines 29-31. It can also be seen there is a receptacle **130** with a load bearing and articulating surface **136** having a diamond table **158** also sintered thereon. Pope also discloses the load bearing and articulation surfaces are burnished, col. 3, lines 35-37. However, Pope does not teach that there are substrate surface topographical features with different depths or two different uniform series of topographical features. Heimke et al. teach (Fig. 7) substrate topographical features **150,250** that are of different depths. Heimke also teaches that the topographical features enable surface to have better load transfer, col. 3, lines 25-36. Heimke additionally teaches (Figs. 10-14) uniform series of topographical features. Heimke also teaches that any of the features can be combined to use different features, col. 12, lines 56-60. It would have been obvious to one of ordinary skill in the art to utilize different surface irregularities as taught by Heimke et al. in bonding the diamond to the substrate for the prosthetic device of Pope et al. such that

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it better distributes load transfer. Regarding claim 32, Pope discloses the substrate can be titanium or cobalt or chrome, etc. col. 3, lines 4-7. With respect to claim 86, although not explicitly stated (chemical bonds result from sintering) the substrate and diamond table have chemical bonds between the substrate and diamond table.

Claims 24,35,36, 47,48,51,70-73,75-79,84 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pope et al. '601 in view of Heimke '698 as applied to claim 20 above (for claim 24), and further in view of Hall (4604106). Pope et al. as modified by Heimke is explained above. Regarding claim 36, it can be seen Pope shows the diamond table only covers a portion of the substrate's exterior surface. It can be seen that Pope illustrates the prosthesis has extending *generally* from the periphery of the diamond compact a neck **112**. However, Pope in view of Heimke fail to explicitly disclose that the bonded materials result in a zone with a gradient in which both metal and diamond are found. Hall teaches (Figs. 3,4) that gradient or transition zones are present in compacts made by high pressure resulting in metal mixed the diamond in a layer, col. 3, lines 64-68. Hall also teaches that catalyst metal is used to better bond diamond to a substrate and are in interstitial spaces of the diamond layer, col. 7, lines 49-55,61-68. Additionally, important is the catalyst metal because when the substrate is steel it causes a chemical reaction with the diamond, and thus the catalyst forms a zone to separate the diamond from the steel, col. 9, lines 35-46. It would have been obvious to one of ordinary skill in the art to have the substrate and diamond material have a gradient transition zone with a catalyst metal as taught in Hall with the prosthesis of Pope as modified by Heimke such that it assures the materials do not separate in the

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patient under wear and that a proper bond is formed between two different materials. Hall does teach cobalt can be used as a solvent catalyst material and Pope discloses CoCr is a suitable material for the prosthesis, thus it would have been obvious to one of ordinary skill in the art to use CoCr as the solvent catalyst metal. With respect to claims 75,84 Heimke is explained above regarding surface topographical features. Regarding claims 71,73, The examiner is interpreting the claimed elements "a lip" in this way: an outward projection. Claims in a pending application should be given their broadest reasonable interpretation. *In re Pearson*, 181 USPQ 641 (CCPA 1974). See also *In re Morris*, Fed. Cir. 1997 127 F3d 1048, 1054,1055. Thus, since Heimke teaches outward projections it can be interpreted as a "lip". With respect to claim 72, it would have been an obvious expedient to modify the interlock between the diamond and substrate to be dovetailed, since such a modification would result in a predictable effect of a strong interlock that is to some degree inseparable in the direction they are attached to one another.

Claims 20,27-31,86,89,90 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pope et al. (5645601) in view of Matthias et al. (GB 2290328). Pope et al. is explained supra. However, Pope et al. fail to disclose substrate topographical features with the surface having depressions of different depths and that the depressions are located within one another. Matthias et al. teach (Fig. 6) that the substrate surface can have concentric depth depressions. Matthias et al. teach that the surface features are used such that they improve the bonding between a substrate and a coating of hard material in a structure that bears a load, page 2, lines 16-19. Matthias

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teaches that the depths are different, page 6, lines 16,22. It can be seen the shape of the depressions are round. It would have been obvious to one of ordinary skill in the art to utilize different surface depth depressions as taught by Matthias et al. in bonding the diamond to the substrate for the prosthetic device of Pope et al. such that it better distributes load transfer. With respect to claim 86, although not explicitly stated (chemical bonds result from sintering) the substrate and diamond table have chemical bonds between the substrate and diamond table.

Claims 35,38, 70,85 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pope et al. '601 in view of Matthias et al. (GB 2290328) in view of Hall '106. Pope et al. is explained as before. Matthias et al. is also explained supra. However, Pope and Matthias fail to disclose the explicit teaching that the diamond bonded to the substrate includes a gradient zone with metal in the diamond. Hall teaches (Figs. 3,4) that gradient or transition zones are present in compacts made by high pressure resulting in metal mixed the diamond in a layer, col. 3, lines 64-68. Hall also teaches that catalyst metal is used to better bond diamond to a substrate and are in interstitial spaces of the diamond layer, col. 7, lines 49-55,61-68. Additionally, important is the catalyst metal because when the substrate is steel it causes a chemical reaction with the diamond, and thus the catalyst forms a zone to separate the diamond from the steel, col. 9, lines 35-46. It would have been obvious to one of ordinary skill in the art to have the substrate and diamond material have a gradient transition zone with a catalyst metal as taught in Hall with the prosthesis of Pope as modified with Matthias such that it assures the materials do not separate in the patient under wear and that a proper bond is

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formed between two different materials. Hall does teach cobalt can be used as a solvent catalyst material and Pope discloses CoCr is a suitable material for the prosthesis, thus it would have been obvious to one of ordinary skill in the art to use CoCr as the solvent catalyst metal.

Response to Arguments

Applicant's arguments with respect to claims 20,35,70,86 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian E. Pellegrino whose telephone number is 571-272-4756. The examiner can normally be reached on M- F (9am-5:30pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Corrine McDermott can be reached on 571-272-4754. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TC 3700
/Brian E Pellegrino/
Primary Examiner, Art Unit 3738